Gateway

Vol. 3, No. 15
Mar. 20, 1987

The ARRL Packet-Radio Newsletter

TAPR TO MAKE FO-12 MODEMS AVAILABLE

TAPR president Lyle Johnson, WA7GXD, has announced that TAPR will be producing a limited production run of FO-12 compatible 1200-bit/s modems. These modems include a PSK demodulator, and modulators for both frequency-shift keying (FSK), as required by FO-12, and phase-shift keying (PSK) transmissions. The PSK modulator allows loop-back testing of the demodulator and creates the possibility of 1200-baud PSK terrestrial links as well. (For a report on the use of 1200-baud PSK, see "W3IWI: SHOULD PSK BE THE 1200-BAUD STANDARD?", Gateway, Volume 3, Number 8.)

The modem will be supplied in kit form, which will include the three circuit boards and all parts except the enclosure, which may be obtained at Radio Shack. The price will be approximately $85. The initial production will be 100 units. Orders may be placed with TAPR at 602-746-1166.

From Amateur Satellite Report #144

INFORMATION SWAPFEST AT TAPR ANNUAL MEETING

The annual meeting of Tucson Amateur Packet Radio (TAPR) was held in Tucson on February 21, with 80-90 people in attendance. Reports of progress on several fronts were given by those involved. Included were reports on the Texas Packet Radio Society's TEXNET project, by Bill Reed, WDØETZ; the NET/ROM networking firmware (see Gateway, Volume 3, Number 12), by Mike Busch, W6IXU, of Software 2000, Inc; HF modem tests, by Eric Gustafson, N7CL; TCP/IP networking (see Gateway, Volume 3, Number 12), by Phil Karn, KA9Q; the TAPR PSK modem for use with the FO-12 satellite, by Tom Clark, W3IWI; the new WØRLI/VE3GYQ BBS program, by Dave Toth, VE3GYQ; and PAKGRAM, an automated radiogram program, by WB8TKL. [See related stories in Gateway, Volume 3, Number 13.]

Re-elected to the TAPR board of directors were: Harold Price, NK6K and Tom Clark, W3IWI. New TAPR board members elected were: Dianne Marshall, AL7FG; Bob Gregory, KB6QH; and Dave Toth, VE3GYQ. TAPR officers for 1987 are Lyle Johnson, WA7GXD, President; Tom Clark, W3IWI, Executive Vice President; Dianne Marshall, AL7FG, Secretary; and Terry Price, N6HBB, Treasurer.

From Scott Loftesness, W3VS, via CompuServe

N2WX TESTS TNC 2 ROUNDTABLE FIRMWARE

One of, if not the biggest, complaints I get about packet is, "you can't conduct a reasonable multi-person net or roundtable." Even after taking twenty years configuring all the monitor stuff, packets still get dropped and it's just such a pain to do that no one (down this way at least) does it.

Recently, the Melbourne, FL switch/digipeater got some new code in its internal ROM that includes a rudimentary roundtable manager. It does its job once all participants have connected and selected "TAble" mode. Essentially, the program makes "copies" of each packet, sticking the source call on the front and sending a copy to each participant. Although this is incredibly inefficient, and intuitively it would seem it would bog down almost immediately, in practice the performance is really not that bad. In early tests, we had 4 or 5 stations in the roundtable, and if it were not for the TNCs on frequency running pre-version 2 AX.25, the net would have surely gone a lot faster, as there were many retransmissions and collisions caused by the older TNCs.

The roundtable manager version we used has a couple of bugs floating around still, so it really is not ready for general distribution.

From an article by Howie Goldstein, N2WX, in the FADCA>BEACON, appearing in Packet Radio Magazine

[The author also wrote the standard TAPR TNC 2 firmware program -- Ed.]

NET.EXE UPDATE

NET.EXE, the networking program written by Phil Karn, KA9Q, is now available via CompuServe's HamNet in DL9. It is also available from the telephone BBS of Bdale Garbee, N3EUA, in Denver (303-593-0766, 1200 bit/s) and from that of Dan Taylor, WB6FIU (805-947-4357, 2400 bit/s).

This latest version includes several fixes and updates, as well as an implementation of the KISS TNC for VADCG and Ashby TNCs by Mike Bruski, AJ9X.

From Bdale Garbee, N3EUA

SATELLITE "WORMHOLE" PROVIDES EAST-WEST PATH

Now, who was it that once wrote, "East is East and West is West and never the twain shall meet?" Whoever it was, he certainly wasn't writing about packet radio in 1987! You mean you haven't heard? Well, East has met West, and here's the East side of the story.

For months, we in the MAPRC [Mid-Atlantic Packet Radio Council] had been hearing talk about the "wormhole, a 9600-baud east-west link which was supposed to have its TNC output on the 220 MHz band. As we entered 1987 the much talked about link hadn't arrived ont hat band. However, in the late evening hours of January 13th, while watching 145.01 MHz packet activity, the call sign W6AMT appeared on the terminal of N4QQ in Silver Spring, MD. On the west end of the path in Mountain View, CA was Greg, WB6ASR, at the keyboard of the W6AMT digipeater. A few days earlier while at the K1HTV QTH for dinner, N4QQ was given a hint of what was to come by my son Andy, KA1GD, a senior EE student at the University of Maryland. Andy had received word from Louie, WA3YMH, who works at the UMD Computer Science Department, that one duplex circuit of a multichannel Ku-band satellite system was being readied for a packet radio experiment. It was to have its TNC connected to a 2-meter FM transceiver on 145.01 MHz. Armed with this information, N4QQ was ready when the West Coast "DX" call sign of W6AMT appeared on his screen.

The 56-kilobaud duplex circuit will (hopefully) be used exclusively for the packet experiment for a year. The satellite station equipment is being provided by VITA LINK Communications Corporation and its co-founder, Mike, WB6FFC. Equipment used at the Maryland end of the Ku-band link includes a TAPR TNC 1, an IC-230 2-meter FM transceiver and a Ringo Ranger antenna. The call sign WA3YMH-1 is being used at both ends of the path.

Initially, a frequency of 145.01 MHz was being used on both ends. After a few days, the Maryland side was moved to 145.07 MHz. Stations in the Washington, DC area presently connect through WA3YMH-1 to W6AMT. If needed, the K3AF digipeater can be used by more distant stations in Maryland and Virginia to get to WA3YMH-1. Operations on the west side of the link also started on 145.01 MHz, but plans call for a move to 223.58 MHz. Early reports indicate that this frequency will be linked to the present 2-meter W6AMT node via TNC 2s running the new NET/ROM firmware [see Gateway, Volume 3, Number 12]. I understand that plans call for most BBS mail forwarding to be done on this same 223.58 MHz frequency.

From an article by Rich Zwirko, K1HTV, in Packet Radio Magazine

ARRL REQUESTS EXTENSION IN 220 MHZ DOCKET

On March 4, the ARRL filed a motion with FCC to extend the comment period an additional 45 days in Docket 87-14, which proposes to take away 220-222 MHz from the Amateur Service. Presently, the comment period of the proposal ends April 6. In support of its motion, the ARRL noted that in most rule making proceedings affecting Amateur Radio, FCC gives a 90-day comment period, to permit technical data to be gathered and submitted, and to allow time for the amateur press to publicize the proposals. In this proposal, FCC allowed only a 45-day comment period. The FCC proposal was available only after the April issue deadline of many amateur publications, and thus its details not known to the total amateur community. Also, in order to prepare a meaningful response, additional time is needed for ARRL to receive and compile data of band occupancy from local volunteer frequency coordinators.

Other interested individual amateurs and groups also have requested an extension of the comment period. If the ARRL request for a 45-day extension is granted, the new date for comments to be received by FCC would be May 21.

From The ARRL Letter

NEWS FROM DOWN UNDER

The Sydney Amateur Digital Communications Group (SADCG) completed design of a Z80-based TNC in early January. A prototype version is in the works.

VK2BVD and VK2AQG have been testing a packet link running at 4800 bauds, using modems from the Hamilton (ON) Amateur Packet Network (HAPN).

From The Australian Packeteer

NTS ON PACKET: A REPORT FROM THE FIELD

Don Simon, NI6A, responded to the recent ARRL Field Services memorandum regarding NTS and packet [see Gateway, Volume 3, Number 14] with a lengthy letter about the state of affairs in California. Here are some extracts from Don's report.

"We agree that each state must have a BBS [that] will be able to split the traffic into section nets for delivery. At this point, there is no software that can do this automatically. So we must identify 'NTS Clearinghouse BBSs' [that] can do this for each state. Thus a national data base showing [which] mailboxes are in each state is required, as we still have traffic returned to us on the HF packet system saying 'There is no known NTS liaison for Montana, or New Brunswick, or Kansas etc on packet,' where in fact there may be a VHF packet BBS... that has section net outlets that [are] unknown to the major HF gateway...

"Here in California we will have the hardest time breaking up the 'NTSCA' designator into 10 sections; California by far pays the highest penalty for this scheme. However, we fully realize that there is no easy way for users to determine exact section locations [for] traffic unless they are skilled and seasoned local NTS operators. ...All WestNet BBS SYSOPs have 'NTSCA' now set to be forwarded to W6CUS-1 for sorting. Although this is not the ultimate method, it will be the most efficient for the present. W6CUS-1 has experienced NTS operators who... check the BBS more than once per day and reroute NTS traffic according to section or local designator and/or take the traffic to the section net for delivery.

"Outgoing traffic from the section level (especially overflow or missed schedule traffic) is also entered onto the local/section WestNet BBS and automatically forwarded to one of the WestNet

HF gateway stations for nationwide packet transfer. Some NTS traffic finds its way to the East Coast via the WestNet/EastNet 'wormhole'... Participating BBSs are WØRLI and N4QQ."

[So how is your section doing at making packet a part of NTS? -- Ed.]

FO-12 MODE JD OPERATION REPORT

I operated FO-12 mode JD every pass of March 10 and 12, 1987, connecting to myself and others, sending UI frames, sending files connected and unconnected, varying transmitter power, and making tape recordings for later analysis. This week I have logged a total of 80 minutes JD operation. For the first 2 passes of Tuesday 10th I had the satellite to myself; DB2OS and ON6UG appearing on the third. On Thursday 12th Freddy ON6UG was active, as well as Philippe ON1KVH. ON1UI was heard for one packet. No US stations were heard on either of the mutual passes (around 1900 UTC, noon US local).

The commands used to set up the TNC 2 were:

```
RESET
MYCALL G3RUH
LCALLS 8J1JAS
BUDLIST OFF
MCOM ON
UNPROTO ALL VIA BEST,WISHES,VIA,FO-12
```

Settings determined experimentally:

```
PACLEN 40
MAXFRAME 1
TXDELAY 50
RETRY 0
FRACK 5
FULLDUP ON
```

A simple test used to determine the minimum power needed was performed by hitting <return> in CONV mode and watching the rate of return of UI frames appearing on the monitor. At minimum range (1500 km), 5 watts to a 10 XY Yagi (about 100 watts EIRP) was just enough (I was sole user). At LOS/AOS about 50 watts was needed, as expected. These figures translate to a huge theoretical signal-to-noise ratio at the spacecraft, so it must be pretty noisy up there. The UK is free of voice FM around 145.8-146 MHz, but not all of Europe is so disciplined.

Actual communications via mode JD have proved rather troublesome. Experiments tried have included short QSOs of the "hello/how are you?/73" kind, sending files in unconnected mode, and sending files in connected mode. Files were 5 lines of 40 characters and 5 lines of 80 characters. MAXFRAME values of 1 and 4, were tried, as were PACLEN of 40 and 80, and FRACK of 1, 3 and 5. Most tests have been conducted with no other users active. Downlink signals to a 16 turn helix and 1.4 db noise figure preamp are "noise free" with the exception of 2 fades lasting about 1 second each.

Unconnected mode seems to work quite well. Single packets, multiple packets, and even 500+ byte bursts would be regenerated, though obviously favoring the shorter bursts. Clearly the satellite receives OK, though why not ALL short packets come back is a puzzle. Even a Doppler-corrected uplink of 1000 watts EIRP at 1500 km on a free channel doesn't ensure retransmission.

Connected mode line-by-line QSO and file transfers have been tried, both when connected to myself and to another station. Performance is about the same -- lousy! Sending a 5-line file can take as long as 3 minutes! Replaying the tape recordings shows that the satellite receives the packets, because they are coming back down OK, but the number of retries can reach 10 to 15 per packet. I assume the problem is lost acknowledgments. Trials with FRACK seemed to make no difference. Is the spacecraft software servicing all inputs at once, or is it scanning? I assume that since in the mailbox system the satellite will take the packets and generate the acks, this difficulty may be peculiar to the regeneration case.

From James Miller, G3RUH, via AMSAT TeleMail

KANTRONICS ANNOUNCES KPC-4 DUAL PORT TNC

Kantronics, Inc of Lawrence, KS, has announced the availability of their new KPC-4 TNC. This TNC incorporates the packet features of the Kantronics KAM all-mode interface, but provides only packet operation. Like the KAM, the KPC-4 has two independent ports, one for VHF and one for HF. It supports simultaneous connections on the two ports, as well as cross-port operations to provide HF/VHF gateway service. Each port can be operated under its own unique call sign. The KPC-4 includes "watchdog" timers that minimize the possibility of continuous transmissions from an unattended station because of power fluctuations.

The KPC-4 also provides the "personal mailbox" option made available for the entire Kantronics packet product line earlier this year. Up to 64 kbytes of random-access memory can be installed in the KPC-4 (32 kbytes is standard), of which all bit 10 kbytes can be allocated to the mailbox.

From Kantronics

NEW AEA PK-232 FIRMWARE PROVIDES WEFAX, KISS

AEA has announced a new version of the ROM-based firmware for the PK-232 all-mode interface. This new firmware provides weather facsimile (WEFAX) reception capabilities, with output going to Epson graphics printer. (Most printers intended for use with the IBM-PC use the Epson graphics protocol.) The printed lines can be manually synchronized to the recieved signal or the transmitted sync signals can be used.

The PK-232 now also includes provisions for the KISS TNC-to-host protocol [see "NET.EXE: BEYOND THE TNC", Gateway, Volume 3, Number 12]. This allows optimal use of the KA9Q NET.EXE program without modifying the TNC.

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Gateway: The ARRL Packet Radio Newsletter is published by the:

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Newington, CT 06111

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Subscriptions are available to ARRL members and nonmembers, at the following rates:

For 25 issues of Gateway:

In the US
- ARRL Member $6.00
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In the US, Canada and Mexico by First Class mail
- ARRL Member $11.00
- Nonmember $14.00

Elsewhere by Airmail
- ARRL Member $14.00
- Nonmember $17.00

Prices are subject to change without notice. Remittance must be in US funds, and checks must be drawn on a bank in the US.

Gateway: The ARRL
Packet Radio Newsletter
American Radio Relay League
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Newington, CT 06111

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